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REMARKS

Status of the Claims

Pending claims

Claims 1 to 172 are pending as filed.

Claims canceled in the instant amendment

Claims 11, 12, 15 to 22, 32, 34 to 37, 47, 50 to 57, 66 to 80, 87 to 99, 111 to 115, 122 to 131, and 134 to 169 are canceled, without prejudice. Thus, after entry of the instant amendment, claims 1 to 10, 13, 14, 23 to 31, 33, 38 to 46, 48, 49, 58 to 65, 81 to 86, 100 to 110, 116 to 121, 132, 133 and 170 to 172 will be pending and under consideration.

Support for the Claim Amendments

The specification sets forth an extensive description of the invention in the new and amended claims.

The Group Restriction Requirement

The Patent Office alleged that the pending claims of the application are directed to six (6) separate and distinct inventions under 35 U.S.C. §121.

The Group Election

In response to the group restriction requirement, Applicants elect Group I, claims 1 to 46, 48, 50, 52, 54, 56, 58, 68, 60 to 65, 81 to 86, 100 to 110, 116 to 121, 132, 133, 170 to 172, drawn to nucleic acids, expression vectors, host cells, methods to produce animal feeds, transforming plants, plant parts or plant cells, non-human transgenic organisms, feed compositions, and plants, plant parts or plant cells comprising the nucleic acid.

The Sequence Restriction Requirement

The Patent Office further alleged that each restriction group reads on a plurality of independent and/or patentably distinct sequences: (a) SEQ ID NO:1 and SEQ ID NO:11; (b) SEQ ID NO:3 and SEQ ID NO:13; (c) SEQ ID NO:5 and SEQ ID NO:9; and, (d) SEQ ID NO:7.

The Sequence Election

In response to the sequence restriction requirement, Applicants elect (b) SEQ ID NO:3 and SEQ ID NO:13, with traverse.

Reasons to reconsider and withdraw restriction requirement

Applicants respectfully request the Patent Office to reconsider and to withdraw the restriction requirement for the following reasons.

Applicants respectfully request addition of SEQ ID NO:11 to restriction group (b) directed to SEQ ID NO:3 and SEQ ID NO:13. Both SEQ ID NO:11 and SEQ ID NO:3 are DNA sequences synthetically generated by Applicants. Both SEQ ID NO:11 and SEQ ID NO:3 are based on a *Y. pestis* phytase. Applicants took an unfinished gene and filled in the gaps with a corresponding sequence from an appA gene to get SEQ ID NO:3. Then, Applicants made a codon-optimized version of the *Y. pestis* gene to generate SEQ ID NO:11. Both SEQ ID NO:11 and SEQ ID NO:3 are artificially generated and/or modified versions of *Y. pestis* phytase, which share 77% sequence identity (please see attached Appendix A).

CONCLUSION

It is believed that the all claims pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

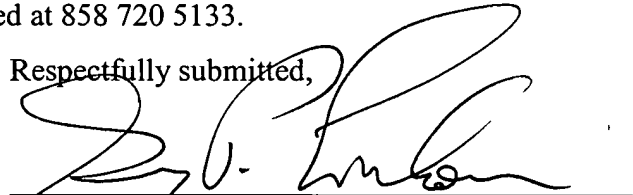
Applicants believe that no additional fees are necessitated by the present response and amendment. However, in the event any such fees are due, the Commissioner is hereby authorized to charge any such fees to Deposit Account No. 03-1952. Please credit any overpayment to this account.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 858 720 5133.

Date:

Feb. 19, 2004

Respectfully submitted,



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Appendix A

The top DNA sequence is SEQ ID NO:3, the bottom DNA sequence is SEQ ID NO:11.

```

      10      20      30      40      50      60
.....|.....|.....|.....|.....|.....|.....|.....|
atgtcagttattagaaaaatcgtgtacggcctatctgggcttggtattgatgctaagcggattg
M S V L E N R V R L S G L V L M L S G L
atgtcgggactggagaaccgcgctcgccttccgggttagtggttaatgctgtccggcctg
M S G L E N R V R L S G L V L M L S G L

```

```

      70      80      90     100     110     120
.....|.....|.....|.....|.....|.....|.....|.....|
gctgctattactgcgcccgttagccgcccagccatcgggctataactttagaacgtgtggtt
A A I T A P V A A E P S G Y T L E R V V
gctgctatcacgcgcctgtggccgcccgaaccatcgggggtacaccttagaacgtgtagtt
A A I T A P V A A E P S G Y T L E R V V

```

```

     130     140     150     160     170     180
.....|.....|.....|.....|.....|.....|.....|.....|
attttgagtcgccatgggtgttcgctcgcggaccacaacacacgcagcttatgaatgatgtt
I L S R H G V R S P T K Q R S L * M M L
attttgagtcgccatgggtgttcgtagcccgactaagcagacgcagctgatgaatgatgta
I L S R H G V R S P T K Q T Q L M N D V

```

```

     190     200     210     220     230     240
.....|.....|.....|.....|.....|.....|.....|.....|
acgccagataagtggccacaaatggccgggtaaaagcgggggtattttaacgccacgtgggtgcg
R Q I S G H N G R * K R G I * R H V V R
acacctgataagtggccctcagtgccgggttaaagcggggctatttgactcctcgtggcgcc
T P D K W P Q W P V K A G Y L T P R G A

```

```

     250     260     270     280     290     300
.....|.....|.....|.....|.....|.....|.....|.....|
gagttgggtcacattgatggggggggttttatgggtgattactttcgcagccttggtttgtta
S W S H * W G G F M V I T F A A L V C *
gaactgggtcaccttgatggggggggttttatggcgattattttcgcagcttggttcttttg
E L V T L M G G F Y G D Y F R S L G L L

```

```

     310     320     330     340     350     360
.....|.....|.....|.....|.....|.....|.....|.....|
gcggcgggtagtccggcagaggggggggtatatgcacaggcagatatcgatcaacgtac
R R D V R Q R G G Y M H R Q I S I N V P
gdcgggggtgcgcggcagagggcggtgtatatgcacaggcagatatcgacagcgact
A A G C P A E G G V Y A Q A D I D Q R T

```

```

     370     380     390     400     410     420
.....|.....|.....|.....|.....|.....|.....|.....|
cgcttaaccggacaggcatttcttgatgggtgtggctccgggggtgtgggttgacgtgcat
A * P D R H F L M V W L R G V V * P C I
cgcttaaccgggtcaggcttttcttgatgggtgtggcgccgggttgccggcctgactgtccac
R L T G Q A F L D G V A P G C G L T V H

```

```

     430     440     450     460     470     480
.....|.....|.....|.....|.....|.....|.....|.....|
aatcaggccgatttgaaaaagaccgatccctgtttcatccggtagagactggcggtgtgt
I R P I * K R R P I P C S I R * R L A C V
aatcaggccgatcttaagaaaaccgatccctgtttcatccggttgaaacggcggtctgt
N Q A D L K K T D P L F H P V E T G V C

```

```

     490     500     510     520     530     540
.....|.....|.....|.....|.....|.....|.....|.....|
aagttagacaacgcacaaacagataaagcgattgaagaacgatggggcgggcccgttagat
S * T T H K Q I K R L K N D W A G R * I

```

aaactgggacaacgc ccaaaccgataaggcaattgaggaacgctggggcggcccggttagac
K L D N A Q T D K A I E E R L G G P L D

550 560 570 580 590 600
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
acgggtgagccagcgctacgctaaaccttttggccagatgggggacgtgctgaatttttgcg
R * A S A T L N L L P R W G T C * I L R
acggtaagccagcgctatgccaaaccgttttggcgcaaatggggcgatgtcctgaacttcgct
T V S Q R Y A K P F A Q M G D V L N F A

610 620 630 640 650 660
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
gcttctccttatcgcaaatctttgcaacagcaaggaaaaacgtgtgattttggccactttt
L L L I A N L C N S K E K R V I L P T L
gcgagtcctgactgcaagtcactgacagcagcaggggaaaacttgtgacttcgcacactttt
A S P Y C K S L Q Q Q G K T C D F A H F

670 680 690 700 710 720
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
gcggccaatgaagttaacgttaataaagaagggaacaaaagtgaccctcagtgggcccactg
R P M K L T L I K K G Q K * P S V G H W
gcggccaacgaagttaatgtaaacgaaggacacgaaaagttaccctgtcaggcccccctg
A A N E V N V N K E G T K V T L S G P L

730 740 750 760 770 780
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
gcggttatcatcgacattgggtgaaatcttcttattacaaaacgcacaaagccatgccagag
R Y H R H W V K S S Y Y K T H K P C Q R
gcgctgtctagcacgttggggcgaaatcttcttgcgtgcagaacgcgcagggcgatgcccgaa
A L S S T L G E I F L L Q N A Q A M P E

790 800 810 820 830 840
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
gttgcctgggcaacggcttaaaagggcgaggagaattgggtatccttattgtcattacataac
L P G N G * K G R R I G Y P Y C H Y I T
gtagcgtggcagcggttgaaaggcgctgagaactgggtgtctcttctgagcctgcacaaat
V A W Q R L K G A E N W V S L L S L H N

850 860 870 880 890 900
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
gcgcaatttaatttaatggcaaaaacaccgtatatcgcccgtcataaagggaacgacctta
R N L I * W Q K H R I S P V I K G R H Y
gcacagtttaacctgatggctaaaacgccatacattgcacgccaacaaaggcacgcccgtt
A Q F N L M A K T P Y I A R H K G T P L

910 920 930 940 950 960
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
ttacagcagatagatacggctttaacccttcaactggatgctcagggggcaaaaagctacc
Y S R * I R L * P F N W M L R G K S Y P
ttacagcaaatcgataccgactgaccctgcaactggacgcccagggggcaaaaactgccg
L Q Q I D T A L T L Q L D A Q G Q K L P

970 980 990 1000 1010 1020
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
atttcagcccaaaaccgggtcttggttcctcggtgggcatgataaccaatattgccaatatt
F Q P K T G S C S S V G M I P I L P I L
atctcgggtcagaaccggtgttttattcctgggtggccacgacacaaaatattgctaatac
I S A Q N R V L F L G G H D T N I A N I

1030 1040 1050 1060 1070 1080
....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|....|
gcgggtatgctgggagccgactggcagctaccgaggaacctgataatactccaccaggt
G C G G T A T G C T G G G A G C C G A C T G G C A G C T A C C G A G G A A C C T G A T A A T C C A C C A G G T

R V C W E P T G S Y P S N L I I L H Q V
gdcgggtatgctggggcgcagattgggcagttaccgggaacaaccggataaacaccaccaccgggc
A G M L G A D W Q L P E Q P D N T P P G

1090 1100 1110 1120 1130 1140
.....|.....|.....|.....|.....|.....|
gggggatgggtttttgaactatggcacaatccggataaccaccagcgctacggtgcggtg
G D W F L N Y G K I R I T T S A T L R *
ggcgggtcgggtctttgagctgtggcagaatccggacaatcatcaacggttatgtggcgtt
G G L V F E L W Q N P D N H Q R Y V A V

1150 1160 1170 1180 1190 1200
.....|.....|.....|.....|.....|.....|
aagatgttctaccaaacgatggatcagttgcgtaatgccgaaaaatgggatctgaaaaat
R C S T K R W I S C V M P K N W I * K I
aagatgttctatcagaccatggatcaattgcgtaacgccgagaagctggatttaaagaac
K M F Y Q T M D Q L R N A E K L D L K N

1210 1220 1230 1240 1250 1260
.....|.....|.....|.....|.....|.....|
aacccagcgggtattatattccggttcagttgctgggtgtgaaaataacggtgacgataag
T Q R V L F P L Q L L V V K I T V T I S
aatcccgccggcatcatcagtgctgctgtggcggcctgcgagaataatggtgacgataaa
N P A G I I S V A V A G C E N N G D D K

1270 1280 1290 1300 1310 1320
.....|.....|.....|.....|.....|.....|
ctttgcgagcttgatacattccaaaaagaaagtggctaaggtaattgaacctgcctgcac
F A S L I H S K R K W L R * L N L P A T
ctgtgcgaaacttgatacttttcaaaaaaaagttagcgaaagtcattgaacctgcgtgtcat
L C E L D T F Q K K V A K V I E P A C H

.....|
atctaa
S
atttaa
I *